REMARKS

Attached hereto is a Request for an Extension of Time and the appropriate fee.

The second Restriction Requirement of May 6, 2003 defined the species of the invention that was elected by applicant as ". . . drawn to a method in making a plasma display comprised of in part heating one panel in a dry gas atmosphere, then bonding the panels together." Thus, the species elected and listed in the Patent Office's citation of Claims 221-225 were held to distinguish over other species wherein both panels were heated in a dry gas atmosphere and then the panels were bonded together.

The present Office Action, however, does not recognize the same claim features that were defined by the Patent Office.

The present invention prevents a fluorescent substance layer from being degraded by heat. The degradation is caused by steam vapor that is released from the MgO layer during the bonding step. To achieve this purpose, Claim 221 and new Claim 281 provide a PDP production method that includes: a heating step for heating a first panel while an MgO layer formed on the first panel is in contact with a dry gas; and a subsequent bonding step for, after the heating step, putting the first panel and a second panel together, and bonding the first panel and the second panel, a fluorescent substance layer being formed on the second panel. According to the claimed PDP production method, the bonding step is performed after the heating step. With this arrangement, the fluorescent substance layer, having been formed on the second panel, is prevented from being degraded by heat during the bonding step because before the bonding step is performed, most of the steam vapor has already been released from the MgO layer during the preliminary heating step.

The heating step is performed while the surface of the MgO layer is exposed to dry gas and a large open space. This allows steam vapor adsorbed on the MgO layer to be removed without being affected by impurities released from the fluorescent substance layer or the sealing material. With this arrangement, less amount of gas is released from the MgO layer during the subsequent bonding step, and the fluorescent substance layer is prevented from being degraded by heat during the bonding step since the fluorescent substance layer is not affected by the gas released from the MgO layer during the bonding step. Any change in the manufactured PDP with time is also prevented since the production method greatly reduces the possibility that the steam vapor, held by adsorption on the panels, is gradually released during discharging.

Even if the panels are subsequently exposed to a normal atmosphere after the heating step and before bonding step is performed, the amount of steam vapor contained in the MgO layer immediately before the bonding step is smaller than before the heating step is performed, because steam vapor is removed from inside the MgO layer as well as from the surface thereof during the heating step, and if steam vapor is adsorbed while the panels are subsequently laid open in a normal atmosphere, steam vapor is adsorbed only on the surface of the MgO layer.

As described in the Specification and shown in the Tables, the inventors of the present invention conducted experiments on degradation of the fluorescent substance layer by heat that occurs during the bonding step. By analyzing the experimental results, the inventors discovered that the degradation of the fluorescent substance layer was actually caused by steam vapor released from various members of the panels during the bonding step, and that the degradation of the fluorescent substance layers by heat during the bonding step is mainly caused by the steam vapor released from the protecting layer made of MgO because the largest amount of steam vapor is released from the MgO layer. More specifically, the inventors reached the present

invention by taking note that as the MgO layer is gradually heated, the release of steam vapor reaches first and second peaks at around 200°C to 300°C and around 450°C to 500°C, respectively.

Also, the inventors of the present invention verified through experiments that the heating of the MgO layer during the heating step enables sufficient amount of steam vapor to be released from the MgO layer to outside the panels, and as a result, steam vapor is hardly released from the MgO layer during the bonding step, enabling the fluorescent substance layer to be hardly degraded by heat during the bonding step.

The Office Action cited the *Berkenblit et al.* (U.S. Patent No. 4,018,490) for a combination with the *Shinoda et al.*, published European Patent Application 554172, to reject each of the outstanding claims under 35 U.S.C. § 103.

The Office Action contended that the *Berkenblit et al.* reference was the primary teaching for heating a first panel in a dry gas and then putting the first panel and the second panel together and bonding the two panels. The *Shinoda et al.* reference was primarily cited for its disclosure of a fluorescence layer on a second panel in the production of a plasma display.

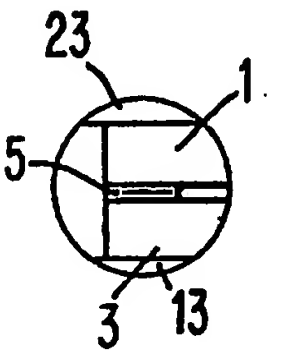
Applicant respectfully traverses this interpretation of the *Berkenblit et al.* reference.

The *Berkenblit et al.* reference recognizes the desirability of preventing any impurities from being introduced into a fabricated panel. Referring to Figure 1A and Figure 1, it is clear that *Berkenblit et al.* teaches a pair of glass plates with MgO that sandwiches a solder glass frame inserted within a controlled gas ambient furnace system.

United States Patent [19]
Berkenblit et al.

[11] **4,018,490**
[45] **Apr. 19, 1977**

FIG. 1A



(1) GLASS PLATE WITH MgO

(3) GLASS PLATE WITH MgO

(5) SOLDER GLASS FRAME

Basically, the seal frame comprises a frame of suitable solder glass or other sealant material which is to circumscribe the active gas discharge region between the pair of plates. This is more clearly shown in FIG. 1A wherein glass plates 1 and 3 are separated by seal frame 5. As hereinabove mentioned, each of plates 1 and 3 typically have deposited thereon sets of parallel conductors coated with a dielectric glass which is in turn coated with a layer of material, such as MgO.

COL 4, LINE 63
TO COL 5, LINE 4

As can be seen, *Berkenblit et al.* not only does not teach the fluorescent substance layer on a second panel, but clearly does not teach a preliminary heating step for heating only the first panel with an MgO layer while in contact with a dry gas in order to remove impurities. *Berkenblit et al.* rather teaches the insertion of both glass plates mounted relatively close together and placed in a sealed furnace, and then as described in the cited passages of Column 6, Line 5, et al., this structure is then subject to being evacuated by a sorption pump and then repetitively evacuated and backfilled with air as the furnace is heated to seal the panel together.

Our claims, as selected in the restriction process, separately heat the first panel with an MgO layer while in a dry gas environment and then subsequently put the first panel and a second

panel together with a fluorescent substance layer on the second panel and bonding them to form a preform for the manufacturing of a plasma display panel. These steps are further elaborated upon in the newly drafted Claims 281-287.

These claims must be compared with the teaching of the *Berkenblit et al.* reference that teaches inserting a stack of two panels in a chamber with a seal frame and then applying the initial heating step. Thus, the two panels are put together before they are heated. Our present claims define the first panel as heated in the heating step, and then subsequently the bonding step has the two panels put together for bonding. Thus, the *Berkenblit et al.* reference, even during its heating step, has a confined space between the two panels to limit the introduction of a purifying air and the release of, for example, steam vapor.

The *Shinoda et al.* reference also fails to teach or suggest that a panel with an MgO layer is heated while in contact with a dry gas and then that panel with another panel having a fluorescent substance layer are stacked together and then subsequently bonded.

Even if the fluorescent layer formation of the *Shinoda et al.* reference is applied to a gas discharge panel fabrication of the *Berkenblit et al.* reference, there would be no teaching of a preliminary heating of a panel with the MgO layer in dry gas before a pair of panels is put together and bonded, as disclosed in the present claims.

It is also believed that the hypothetical combination would still be inferior in preventing any fluorescent substance layer from being degraded. Thus, the hypothetical combination relied upon in the Office Action rejection does not meet the specific claims that were selected in the Restriction Requirement.

As noted in the case of *In re Rijckaert* (CAFC 1993), 28 USPQ2d 1955:

> In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1143, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. *Id.* "A *prima facie* case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 782, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) quoting *In re Reinhart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). If the examiner fails to establish a *prima facie* case, the rejection is improper and will be overturned.
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> Rijckaert argues that the examiner has not established a *prima facie* case of obviousness and that the examiner's assumptions do not constitute the disclosure of prior art. We agree.

In summary, it is believed that the presently pending claims are now allowable over the cited references, and an early notification of the same is requested.

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If the Examiner believes that a telephone interview will help further the prosecution of this case, he is respectfully requested to contact the undersigned attorney at the listed telephone number.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on March 5, 2004.

By: James Lee

Signature

Dated: March 5, 2004

Very truly yours,

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